

WHAT IS CLAIMED IS:

1. A method for detecting a boundary between sequences comprising:
  - (a) sampling a communications channel;
  - 5 (b) detecting a packet on the communications channel using the samples;
  - (c) determining an initial boundary position;
  - (d) determining a flag status;
  - (e) determining a register value;
  - 10 (f) comparing the register value with a threshold; and
  - (g) determining the final boundary position based on the results of the comparison.
2. The method of claim 1, wherein the method further comprises a step  
15 of (c.1) initializing a counter.
3. The method of claim 2, wherein the method further comprises a step  
of (h) repeating steps (d)-(g) until the boundary is found.
- 20 4. The method of claim 2, wherein the determining the initial boundary position step comprising:

correlating a most recent sample with each sample from a plurality of previous samples;

computing an average correlation from the correlation results;

computing a threshold from an averaging of a sequence of previously

5 calculated average correlations;

comparing the average correlation with the threshold; and

determining the initial boundary based on the results of the comparison.

10 5. The method of claim 4, wherein the sequence of previously calculated average correlations is a sequence of 128 previously calculated average correlations.

6. The method of claim 5, wherein the sequence of 128 previously  
15 calculated average correlations starts 10 average correlations from the most recently calculated average calculation.

7. The method of claim 4, wherein the comparison compares the average correlation to  $1/2$  times the threshold.

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8. The method of claim 4, wherein the initial boundary is determined if the average correlation is less than  $1/2$  times the threshold.

9. The method of claim 2, wherein the determining the flag status step  
5 comprising:

correlating a most recent sample with each sample from a plurality of previous samples;

computing an average correlation from an average of the individual correlation results;

10 computing a threshold from an average of a set of average correlations;

firstly comparing the average correlation with the threshold and a value in the counter with a first prespecified value;

15 determining the status of a first flag based on the result of the first comparison;

secondly comparing the average correlation with the threshold and the value in the counter with a second prespecified value;

determining the status of a second flag based on the result of the second comparison;

20 thirdly comparing the value in the counter with a third prespecified value; and

determining the value in the counter based on the result of the third comparison.

10. The method of claim 9, wherein the first comparison compares the  
5 average correlation to  $1/2$  times the threshold and the first prespecified  
value is 15.

11. The method of claim 9, wherein the first flag is set to a high value if  
the first comparison is true.

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12. The method of claim 9, wherein the second comparison compares  
the average correlation to  $1/4$  times the threshold and the second  
prespecified value is 30.

15 13. The method of claim 9, wherein the second flag is set to a high value  
if the second comparison is true.

14. The method of claim 9, wherein the value in the counter is  
incremented if the value in the counter is less than the third prespecified  
20 value.

15. The method of claim 9, wherein the third presepecified value is 64.

16. The method of claim 2, wherein a most recent sample is correlated with each sample from a plurality of previous samples, an average of the individual correlation results (average correlation) and an average of average correlations (threshold) are computed, wherein the determining the register value step comprising:

firstly comparing the average correlation with the threshold, the counter with a first value, and a first flag value with a presepecified value;

secondly comparing the average correlation with the threshold, the counter with the first value, and a second flag value with the presepecified value;

thirdly comparing the average correlation with the threshold and the counter with the first value;

incrementing the register value if any of the first, second, and third comparisons are true; and

setting the register value to zero if all of the first, second, and third comparisons are false.

17. The method of claim 16, wherein the first comparison compares the average correlation to the threshold, the counter with a 30 value, and the first flag value with a high value.

5 18. The method of claim 16, wherein the second comparison compares the average correlation to 0.8 times the threshold, the counter with a 30 value, and the second flag value with a high value.

10 19. The method of claim 16, wherein the third comparison compares the average correlation to 1.5 times the threshold and the counter with a 30 value.

20. The method of claim 2, wherein the determining the boundary step comprising the step of declaring the boundary to be a specified number of  
15 samples ahead of the most recent sample if the register value is equal to a specified value.

21. The method of claim 20, wherein the specified number is 64.

20 22. The method of claim 20, wherein the specified value is 4.

23. A method for providing an enhanced operating mode, wherein there are a plurality of communications devices in a communications system, the method comprising:

- detecting a special signaling format in a received packet from an enhanced communications device;
- enabling the enhanced operating mode;
- encoding packets destined for the enhanced communications device in the special signaling format; and
- encoding packets destined for other communications devices in a usual signaling format.

24. The method of claim 23, wherein the usual signaling format is the signaling format specified in a set of technical specifications used to specify the communications system.

25. The method of claim 23, wherein a receiver of a packet using the special signaling format is an enhanced communications device.

26. The method of claim 25, wherein the enhanced communications device is able to decode the packet using both the special signaling format and the usual signaling format.

27. The method of claim 25, wherein an unenhanced communications device can decode only packets using the usual signaling format.

- 5 28. The method of claim 25, wherein the enhanced communications device will transmit using the usual signaling format to an unenhanced communications device and the special signaling format to another enhanced communications device.

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